

To: Mike Baker (SWA) CDM Chair and Mike Nadon (TWA)
 From: Roger Beatty (AAL) Airline lead - Reroute Advisory Team
 Collaborative Routing Group
 Collaborative Decision Making Program
 Date: Jan 31, 2001
 Subject: Report on Reroute Advisory Team (RAT) activity

The Collaborative Routing Group of the CMD Program was tasked to develop recommendations for improving the process for developing, disseminating and utilizing reroute advisories that are produced by ATCSCC and disseminated to other FAA facilities and to users of the NAS. See below for a copy of this task taken from the S2K Action Matrix dated 11/28/00.

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| 13 | 22d (6-3) | CR "advisory" workgroup Lead: Roger Beatty Team includes: M. Abbott D. Buckingham Keith Campbell Ed. Corcoran A. Davis R. Downer Mike Nadon Jeff Richards | 1/10/2001 2/1/2001 4/1/2001 year 2002 | The group recognized the combined reroute advisory message program did not work and recommended that it be discontinued. The group also recommended the development of a graphical representation of current advisories. This representation could be developed in either a web-based or machine-readable format for integration into facility and airline displays. TELCON <i>Recommendations for improved wording</i> <i>Structure, parsable advisory</i> <i>True machine readable advisory by flight with links to CCSD, ADL via Volpe, Flight Id request for advisories</i> |
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Motivation

There are a number of reasons why the current reroute advisory process needs to be enhanced. These include:

1. Reducing the workload of the ATCSCC specialists who create these advisories;
2. Improving the efficiency and effectiveness of the ATCSCC Strategic Planning and Severe Weather teams (including teleconferences to develop strategic plans of operation with traffic managers from other FAA facilities and with AOC staff);
3. Reducing training demands on FAA traffic managers and AOC staff;
4. Increasing conformance of AOC filings and ARTCC refilings to ensure compliance with reroute advisories;
5. Reducing the workload of FAA traffic managers and AOC dispatchers who need to respond to such advisories;
6. Ensuring that AOCs are kept in the loop so that flights are appropriately fueled and equipped to fly the reroutes specified in advisories;
7. Improving the ability of quality assurance analysts to assess the impact of reroute advisories on system performance.

Scope

In our discussions and analyses, we have only focused on “Reroute Advisories”. It is clear that many of the development activities discussed below need to go beyond this and apply the same approach to developing an integrated system to handle all types of advisories.

Sample Reroute Advisories

Below, several examples of actual reroute advisories are listed. This is just a small sample of the variations in such advisories that were reviewed by this subcommittee.

Date: 4/11/00 9:21:00 PM **Advn:** 66 **Origin:** ATCSCC **Facid:** DCC **Title:** ROUTE ADVISORY

IMPACTED AREA: DFW EAST DEPARTURES

REASON: TSTMS

ASSIGNED REROUTE: NORMAL EAST DEPARTURES CAN EXPECT ROUTES SOUTH VIA ACT CWK AND THEN ROUTES TO JOIN THE PREF.

FACILITIES INCLUDED: ZFW/ZHU

VALID UNTIL: 0000Z

PROBABILITY OF EXTENSION: MOD TO HIGH

REMARKS: ASSOCIATED RESTRICTIONS: 15 MIT

Date: 5/18/00 1:48:00 PM **Advn:** 28 **Origin:** ATCSCC **Facid:** DCC **Title:** REROUTE ADVISORY

IMPACTED AREA: DTW ARRIVALS

REASON: TSTRMS

ASSIGNED REROUTE: FROM ZNY...PSB J60 DJB CETUS2 ZDC (METROS)...J6 HVQ J85 DJB CETUS2 ZDC (SOUTH)...MOL J24 HVQ J85 DJB CETUS2 ZTL/ZJX/ZMA...AMG J85 DJB CETUS2 ZTL (ATL ONLY)...J91 HNN DJB CETUS2 ZKC...VHP FWA MIZAR3 ZME/ZFW/ZHU...FLM DQN MIZAR3 ZMP/ZDV/ZLC/ZSE/ZOA/ZAB/ZLA...VIA OBK FWA MIZAR3

FACILITIES INCLUDED: ZOB/ZNY/ZDC/ZTL/ZJX/ZMA/ZID/ZKC/ZME

ZHU/ZFW/ZAB/ZLA/ZOA/ZDV/ZLC/ZSE/ZMP/ZAU

VALID UNTIL: 1800Z

PROBABILITY OF EXTENSION: LOW TO MODERATE

Date: 5/18/00 4:04:00 PM **Advn:** 47 **Origin:** ATCSCC **Facid:** DCC **Title:** REROUTE ADVISORY

THIS IS DTWEAST_1 WITH MODIFICATIONS

IMPACTED AREA: SPICA/CETUS AREA -DTW/ZOB-

REASON: TSTRMS

ASSIGNED REROUTE: TRAFFIC TO DTW NORMALLY OVER CETUS/SPICA VIA... FROM CZY...ECK FNT POLAR POLAR1 DTW ZBW...SYR BUF ECK FNT POLAR POLAR1 DTW NY METROS...GAYEL J95 BUF ECK FNT POLAR POLAR1 DTW PHL...J6 COLNS J134 FLM DQN MIZAR3 DTW DC METROS...LDN J134 FLM DQN MIZAR3 DTW RIC/ORF/RDU...MOL J24 FLM DQN MIZAR3 DTW GSO/CLT/JAX/CHS/SAV/SJU...FLM DQN MIZAR3 DTW ZJX/ZMA...CTY J91 ATL J89 IIU VHP FWA MIZAR3 DTW ZID...FWA MIZAR3 DTW ZKC...IIU DQN MIZAR3 DTW ZME...PXV IIU DQN MIZAR3 DTW ZAU...LFD MIZAR3 DTW ZMP...GRB MBS POLAR1 DTW **FACILITIES INCLUDED:**

ZOB/ZBW/CZY/ZNY/ZDC/ZID/ZTL/ZJX/ZMA ZKC/ZAU/ZMP

VALID UNTIL: 1800Z

PROBABILITY OF EXTENSION: LOW TO MODERATE

Date: 5/18/00 5:48:00 PM **Advn:** 70 **Origin:** ATCSCC **Facid:** blank **Title:** REROUTE ADVISORY

IMPACTED AREA: FILE J6 TO DFW ONLY

REASON: SUPPORT OFFLOADED TRAFFIC ONTO J6

ASSIGNED REROUTE: TRAFFIC OFF ZBW ZNY ZDC NORMALLY FILED J6 TO DFW ONLY: ZDC:PSK J22 VXV J46 BNA LIT BYP3 ZNY: J48 MOL J22 VXV J46 BNA LIT BYP3 ZBW: J48 MOL J22 VXV J46 BNA LIT BYP3

FACILITIES INCLUDED: ZBW ZNY ZDC ZTL ZME

VALID UNTIL: 2000Z

REMARK: THIS CLARIFIES ADVZY 066

Date: 9/23/00 12:53:00 PM **Advn:** 41 **Origin:** ATCSCC **Facid:** DCC **Title:** REROUTE ADVISORY

IMPACTED AREA: CETUS AND MIZAR STARS

REASON: TSTMS

ASSIGNED REROUTE: TRAFFIC LANDING DTW DEPARTING ZDC/ZJX/ZMA/ZTL ZTL:(ATL AND WEST)J89 IIU VHP GIJ LFD MIZAR3 DTW ZTL:(EAST OF ATL) HMV FLM VHP GIJ LFD MIZAR3 DTW ZDC: J134 FLM VHP GIJ LFD MIZAR3 DTW ZNY: (PHL MDT ABE) J6 J134 FLM VHP GIJ LFD MIZAR3 DTW ZJX: (EAST OF ATL) CAE SPA HMV FLM VHP GIJ LFD MIZAR3 DTW (SOUTH OF JAX) J89 IIU VHP GIJ LFD MIZAR3 DTW ZMA: J89 IIU VHP GIJ LFD MIZAR3 DTW

FACILITIES INCLUDED: ZID/ZTL/ZDC/ZNY/ZJX/ZMA/ZAU/ZOB

VALID UNTIL: 1600Z

PROBABILITY OF EXTENSION: LOW

REMARKS: SVR WX YC

Problems

There are a number of areas for improvement in the format and content of these advisories, as well as with the process for creating and using them. These include: improving the transfer of reroute information by providing:

1. Better wording of Reroute Advisories
2. Better structure to Reroute Advisories
3. A graphical interface to identify alternative reroutes and create the advisory
4. Consistent structure and terminology to allow machine readability and to allow specific advisories to be transmitted to the appropriate individuals
5. A graphical interface to display advisory information
6. Data structures and tools to support quality assurance and analysis.

Additional details on these issues can be found in the attached report on “Design Recommendations for an Integrated Approach to the Development, Dissemination and Use of Reroute Advisories” written by Beatty and Smith (December, 2000).

Mid-Term Solutions (1-2 Years)

A number of these issues are being addressed by planned enhancements to existing operational systems. The relevant systems include:

1. The ATCSCC Advisory, CDR and National Playbook Web pages
2. VOLPE’s Common Constraint Situation Display
3. VOLPE’s enhanced TSD Reroute Advisory Tool

4. MITRE's CRCT and Proposal for Enhanced Reroute Advisories concepts
5. ATCSCC's National Logs Project
6. Metron's CDR Tool
7. Metron and CSE's POET.

(Note that if we go beyond considering Reroute Advisories and consider the need for an integrated system that covers all types of advisories, then additional systems such as FSM also need to be included in this list.)

It is clear from our review, however, that although the currently planned enhancements to these systems will help address some of the weaknesses of the current Reroute Advisory system:

- 1. No formal development plan has been completed to ensure that all of the necessary components for an integrated Advisory System are being designed and implemented. (Our review suggests that some important components are not currently being addressed.)**
- 2. The currently planned enhancements to the tools listed above need to be reviewed in terms of future compatibility with an overall integrated system.**

While Beatty and Smith (December, 2000) map out many of the requirements for such an integrated approach, there is a need to complete a formal development plan. In addition to the two concerns listed above, **such a plan is also needed to allow the airlines to begin implementing the tools that their dispatchers and flight crews need in order to take advantage of such enhancements to the Advisory System.**

Short-Term Solutions

The requirements to develop an effective integrated Advisory System, as outlined above, are too significant to make any major enhancements before the 2001 severe weather system. There are, however, some minor changes that could be made that would be helpful. Furthermore, these short-term changes are necessary to evolve toward a more integrated system, so the effort will not be wasted.

Lexicon Development. The first improvement would be to develop a standard lexicon and to provide clear definitions for all of the terms. At present, different words and abbreviations are used for the same concepts in different advisories. In addition, phrases like "LA Basin" are not adequately defined. Both of these problems are barriers to the development of software to help traffic managers, dispatchers and quality assurance analysts in completing their jobs. While it is probably impossible to define all of the relevant terms by this spring, a number of the most important or most frequent terms could be dealt with as a start at this effort. The Reroute Advisory Team is currently awaiting additional airline input on terminology that might be confusing or ambiguous to users. The short term plan calls for the ATCSCC web site to be updated by this spring to provide access to this lexicon as it is further developed.

Training to Ensure Consistent Use of Advisory Fields. There are many cases where the existing fields in the Reroute Advisories are used inconsistently. Like the problem with inconsistent wording, this is a barrier to developing software to assist with the processing of advisories. It is also a problem for the people who must read the advisories, as they may overlook important information because it is not in the correct field.

Introduction of Additional Fields/Subfields. A MITRE report presenting a “Proposal for Enhanced Reroute Advisories”, (Campbell, December 2000) suggests that it may be possible to add a small number of additional fields or subfields to the existing templates used to create Reroute Advisories. Suggested additional fields include:

1. Labeled origin and destination facilities
2. Enhanced description of effective times.

This suggestion should be reviewed carefully, along with consideration of whether there are additional fields that could be added to the existing advisory templates in order to improve their clarity both for the people reading them and for automated systems that could be used to process the advisories.

Conclusion

There is little doubt that the current advisory system is a significant barrier to the efficient and effective planning and implementation of reroutes. There are also potential safety concerns, as the cumbersome nature of the current process may leave AOCs out of the loop when certain advisories are implemented.

In the short term, there are some minor improvements that could be made for next summer. These are worthwhile, as they are necessary steps in the evolution toward an integrated system. Significant improvements, however, require that new software tools be developed. While some of the relevant software enhancements are already proceeding, at present there is no plan to ensure that a complete, integrated Advisory System will be available in the next 1-2 years. Such a plan is clearly warranted, as current practices are a significant impediment to efficiency and safety in the NAS.

To appreciate the potential scope of this task, we strongly advise the readers of this memo to review the attached document “Design Recommendations for an Integrated Approach to the Development, Dissemination and Use of Reroute Advisories”. It is possible that the design and cooperative (Airline and ATCSCC) development of Reroute Advisory automation might be the first steps in producing a GDP-E/FSM like approach to the enroute airspace congestion problem.

One of the problems faced by the Reroute Advisory Team is that many of the parts needed to produce an integrated solution are under independent development by various vendors and governmental organizations. It is beyond organizational authority of this small group to marshal these various efforts into a single strategic plan.